

DOCKET: CU-4976

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANT: Masahiro GOTO

TITLE: VIEW ANGLE CONTROL SHEET AND DISPLAY DEVICE

THE COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, VA 22313-1450

AMENDED CLAIMS

1-11. (cancelled)

12. (new) A view angle control sheet comprising lens portions having trapezoidal shapes in section are arranged at predetermined intervals, a wedge-shaped portion between said lens portions adjacent to each other is filled with the same material as said lens portion or with a material different from said lens portion, said wedge-shaped portion has a bottom surface on a screen image source side while having a leading end on an observer side, and the following relationships hold:

$$N_x \leq N_y$$

$$-0.01 < \Delta n - \cos\theta < 0.002$$

where N_x is a refractive index of a material constituting at least a slope portion of the wedge-shaped portion, N_y is a refractive index of a material constituting said lens portion, and Δn is a ratio (N_x/N_y) of said refractive index N_x to said refractive index N_y , and

a sectional shape of said wedge-shape portion has a wide bottom surface on the screen image source side.

13. (new) A view angle control sheet according to claim 12, wherein, assuming that θ is an angle formed by the slope portion of said wedge-shaped portion and a normal line of a light beam outgoing plane, θ ranges from 3 degrees to 15 degrees.
14. (new) A view angle control sheet according to claim 12, wherein a sectional shape of said wedge-shaped portion is substantially an isosceles triangle.
15. (new) A view angle control sheet according to claim 13, wherein a sectional shape of said wedge-shaped portion is substantially an isosceles triangle.
16. (new) A view angle control sheet according to claim 12, wherein said slope portion has a curved sectional shape and/or a polygonal-line sectional shape such that the screen image source side differs from the observer side in an angle formed by said slope portion and an observer-side surface.
17. (new) A view angle control sheet according to claim 12, wherein said wedge-shaped portion has a light-absorbing effect.
18. (new) A view angle control sheet according to claim 13, wherein said wedge-shaped portion has a light-absorbing effect.
19. (new) A view angle control sheet according to claim 14, wherein said wedge-shaped portion has a light-absorbing effect.
20. (new) A view angle control sheet according to claim 15, wherein said wedge-shaped portion has a light-absorbing effect.

21. (new) A view angle control sheet according to claim 16, wherein said wedge-shaped portion has a light-absorbing effect.

22. (new) A view angle control sheet according to claim 17, wherein said wedge-shaped portion is filled with a material to which light-absorbing particles are added.

23. (new) A view angle control sheet according to claim 18, wherein said wedge-shaped portion is filled with a material to which light-absorbing particles are added.

24. (new) A view angle control sheet according to claim 19, wherein said wedge-shaped portion is filled with a material to which light-absorbing particles are added.

25. (new) A view angle control sheet according to claim 20, wherein said wedge-shaped portion is filled with a material to which light-absorbing particles are added.

26. (new) A view angle control sheet according to claim 21, wherein said wedge-shaped portion is filled with a material to which light-absorbing particles are added.

27. (new) A view angle control sheet according to claim 22, wherein said wedge-shaped portion is formed in a wedge shape having a wide bottom surface on the

screen image source side, and an average particle size of said light beam absorption particles is 1 μm or larger.

28. (new) A view angle control sheet according to claim 23, wherein said wedge-shaped portion is formed in a wedge shape having a wide bottom surface on the screen image source side, and an average particle size of said light beam absorption particles is 1 μm or larger.

29. (new) A view angle control sheet according to claim 24, wherein said wedge-shaped portion is formed in a wedge shape having a wide bottom surface on the screen image source side, and an average particle size of said light beam absorption particles is 1 μm or larger.

30. (new) A view angle control sheet according to claim 25, wherein said wedge-shaped portion is formed in a wedge shape having a wide bottom surface on the screen image source side, and an average particle size of said light beam absorption particles is 1 μm or larger.

31. (new) A view angle control sheet according to claim 26, wherein said wedge-shaped portion is formed in a wedge shape having a wide bottom surface on the screen image source side, and an average particle size of said light beam absorption particles is 1 μm or larger.

32. (new) A view angle control sheet according to claim 22, wherein an additional amount of light-absorbing particles ranges from 10 to 50 volume% in the material with which said wedge-shape portion is filled.

33. (new) A view angle control sheet according to claim 27, wherein an additional amount of light-absorbing particles ranges from 10 to 50 volume% in the material with which said wedge-shape portion is filled.

34. (new) A display device comprising one view angle control sheet according to claim 12 laminated on the observer side of a screen image source.

35. (new) A display device comprising two view angle control sheets according to claim 12 laminated on the observer side of a screen image source, and the control sheets are disposed substantially orthogonal to each other.

36. (new) A view angle control sheet according to claim 12, wherein at least one function of any one of AR, AS, AG, and a touch sensor are imparted to at least one surface side.

37. (new) A display device wherein a view angle control sheet according to claim 12 is bonded.